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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,607	08/21/2003	Lingyi A. Zheng	108298717US	2264

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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,607

Applicant(s)

ZHENG ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 5, 8, 16, 17, 19, 24 and 28-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 9-15, 18, 20-23 and 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of invention of Group I, Species 1 in the reply filed on 9/15/05 is acknowledged. Further applicant has indicated that Claims 1-4, 6, 7, 9-15, 18, 20-23, 25-29, 32-35, 37-41, and 43 read on this election. Claims 5, 8, 16, 17, 19, 24, 30, 31, 36, and 42 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Examiner has observed that claim numbers 28-29, 32-35, 37-41 and 43 do not read on the elected species (Species 1, Figures 4- 8) and accordingly these claims have been additionally withdrawn from consideration.

Specification

The disclosure is objected to because of the following informalities:

- 1) Paragraph 0032, line 3 – it is suggested to replace “base” with “base 110”;
- 2) Paragraph 0042, line 11 - it is suggested to replace “delivery” with “deliver”;
- 3) Paragraph 0053, line 4 – it is suggested to replace “controller 30” with “controller 370”;

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 9-15, 18, 20, 21, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takaku (US Patent No. 6,425,168) in view of Okuda et al (US Pub. No. 2003/0024477) and Chen et al (US Patent No. 6,849,131).

Regarding Claims 1-3, 11-15, 18, 27: Takaku teaches an apparatus (Figures 1, 2a, 2b) [microfeature workpiece holder] adapted to hold a plurality of microfeature workpieces (wafers) for chemical processing, comprising:

longitudinally extending members 203, 204 having a plurality of workpiece support grooves (slots) 21 spaced longitudinally along length of the longitudinally extending members, the workpiece supports being adapted to support the plurality of wafers (microfeature workpieces) 30 in a spaced-apart relationship for processing (Column 4, line 40 to Column 5, line 5).

Takaku does not teach gas delivery conduit.

Okuda et al teach an apparatus (Figures 1-3) that has a longitudinally extending gas nozzle (gas delivery conduit) 21 having an inlet 18, gas outlets 24 spaced longitudinally,

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the outlets being positioned to direct a process gas flow intermediate pairs of the workpiece supports, (Paragraphs 0033, 0034, 0035, 0043). Okuda et al do not explicitly teach that gas conduit is carried by the longitudinally extending member, but further teach (Paragraph 0014) that gas nozzle openings be provided such that these correspond to the substrates and the gas which exits the gas nozzle opening can be easily spread through the region divided between the substrates and thus the gas can be used more effectively and efficiently.

Additionally, Chen et al teach an apparatus (Figures 5-7) that has gas inlet (from gas tube 48) in close proximity to the truncated or flat edge 63 of the wafer to promote substantially uniform flow of reaction gases over the substrate resulting in uniform thickness deposition over the substrate (Column 4, line 50 to Column 6, line 26).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use gas delivery conduit and carried by / formed integrally with the longitudinally extending member as taught by Okuda et al and Chen et al in the apparatus of Takaku to enable uniformity of deposition and promote surface adsorption (Okuda et al - Paragraph 0014 Column3, lines 26-30).

Further it has been held in courts (Case Law) that:

- 1) The motivation to make a specific structure is always related to the properties or uses one skilled in the art would expect the structure to have. *In re Newell* 13 USPQ 2d 1248, 1250 (Fed. Cir. 1989); *Fromson v. Advance Offset Plate* 225 USPQ 26, 31 (Fed. Cir. 1985); *In re Gyurik* 201 USPQ 552, 557 (CCPA 1979).
- 2) Making elements integral was held to have been obvious. *Nerwin v. Erlichman* 168 USPQ 177 (PO BdPatApp 1969); *In re Wolfe* 116 USPQ 443 (CCPA 1958); *In re Howard* 150 US 164 (USSC 1893).

Regarding Claims 9, 20: Okuda et al teach that a process gas supply conduit 18 is releasably coupled to the inlet of gas nozzle (delivery conduit) 21 [Paragraphs 0034, 0035].

Regarding Claims 10, 21: Okuda et al teach that the each of first and second nozzle openings (outlets) 24 of the gas nozzle (delivery conduit) 21 is positioned to direct a process gas flow inwardly toward a center of one of the plurality of microfeature workpieces W when the microfeature workpieces are loaded in the boat (microfeature workpiece holder) 15 [Paragraphs 0035, 0036, 0043].

Claims 4, 6, 7, 22, 23, 25, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takaku (US Patent No. 6,425,168) in view of Okuda et al (US Pub. No. 2003/0024477) and Chen et al (US Patent No. 6,849,131) as applied to Claim 1 and further in view of Kwag et al (US Patent No. 6,402,849).

Regarding Claim 4: Takaku in view of Okuda et al and Chen et al teach all limitations of the claim but do not teach second gas delivery conduit.

Kwag et al teach an apparatus (Figures 1-8) that has a plasma process tube 100 having plural gas injection pipes 120 (gas conduits) with three gas injection portions 150 (Column 4, line 10 to Column 7, line 50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use plural gas conduits as taught by Kwag et al in the apparatus of Takaku in view of Okuda et al and Chen et al to provide increased film deposition rate (Column 5, lines 25-35).

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Regarding Claims 6, 7: Takaku in view of Okuda et al, Chen et al and Kwag et al teach that gas injection pipes (gas delivery conduits) 120 and buffer gas pipe 130 comprise an internal lumen of the longitudinally extending members.

Regarding Claims 22, 23: Takaku in view of Okuda et al, Chen et al and Kwag et al teach all limitations of the claim (as explained above) including that first and second members 203, 204 are joined by cross-member 201 (Takaku – Figure 2a and Column 3, lines 47-53 and Column 4, lines 59-64).

Regarding Claim 25: Okuda et al teach that a process gas supply conduit 18 is releasably coupled to the inlet of gas nozzle (delivery conduit) 21 [Paragraphs 0034, 0035].

Regarding Claim 26: Okuda et al teach that the each of first and second nozzle openings (outlets) 24 of the gas nozzle (delivery conduit) 21 is positioned to direct a process gas flow inwardly toward a center of one of the plurality of microfeature workpieces W when the microfeature workpieces are loaded in the boat (microfeature workpiece holder) 15 [Paragraphs 0035, 0036, 0043].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Nagakura (US Patent No. 6,881,295) teaches an apparatus (Figures 4-8) that has a wafer boat 5, gas feeder 8B that extends along boat 5 and has a plurality of gas outlet holes 9C (Column 5, lines 5-50).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763